भारतीय मानक
Indian Standard

IS 19012 : 2022

नोनानोल — विशिष्टि

Nonanol — Specification

ICS 71.100.60

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भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

December 2022 **Price Group 6**

Fragrance and Flavour Sectional Committee, PCD 18

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards after the draft finalized by the Fragrance and Flavour Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

1-Nonanol is a fatty alcohol with nine carbon atoms and consisting of a hydroxy functional group at C-1 of an unbranched saturated chain. It can be isolated as a component of volatile oils from plants. It is a colorless oily liquid with a citrus odour similar to citronella oil. It is a very hydrophobic molecule, practically insoluble in water. 1-Nonanol is a bitter, clean, and dusty tasting compound. 1-Nonanol has also been detected, but not quantified in gingers, rocket salad, muskmelons, mung beans, and evergreen blackberries. The primary use of nonanol is in the manufacture of artificial lemon oil.

Clause **4.1.4** includes purchaser and supplier agreement.

The composition of the Committee, responsible for the formulation of this standard is listed in Annex B

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

NONANOL — SPECIFICATION

1 SCOPE

This Standard prescribes the requirements and the methods of sampling and tests for Nonanol, used by Fragrance and Flavour Industry.

2. REFERENCES

The following standards contain provisions, which through reference in this text constitute the provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most editions of the standards indicated below.

IS. No	*Title*
IS 326	Methods of sampling and test for natural and synthetic perfumery materials
(Part 1) : 1984	Sampling (*second revision*)
(Part 2) : 1980	Preliminary examination of perfumery materials and samples (*second revision*)
(Part 3) : 2006/ISO 279 : 1998	Determination of relative density (*third revision*)
(Part 5) : 2006/ISO 280 : 1998	Determination of refractive index (*third revision*)
(Part 6) : 2005/ISO 875 : 1999	Evaluation of miscibility in ethanol (*third revision*)
IS 2284 : 1988	Method for olfactory assessment of natural and synthetic perfumery materials (*first revision*)
IS 6597 : 2001	Glossary of terms relating to fragrance and flavour industry (*second revision*)

3. TERMINOLOGY

For the purpose of this standard, definitions given in IS 6597 shall apply.

4. REQUIREMENTS

4.1 Description

4.1.1 The material shall be clear colourless mobile liquid, free from sediment, suspended matter and adulterants.

4.1.2 The material shall be examined for its colour clarity, separated matter and sediment as prescribed under Clause **2** of IS 326 (Part 2).

4.1.3 The assessment of odour and appearance shall be subject to agreement between the purchaser and seller. The material shall be tested olfactorily, especially for by-odours/by-notes, and for the presence of adulterants and impurities, if any, as prescribed in IS 2284.

4.2 Solubility

The material shall be soluble in 1 to 3 volumes of ethanol (60 percent by volume), when tested by the method as prescribed in IS 326 (Part 6).

4.3 The material shall also comply with the requirements given in Table 1.

Table 1 Requirements for Nonyl Alcohol
(*Clause* 4.3)

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test Ref. to IS/Annex (4)
i)	Colour and appearance	Clear colourless liquid	Visual Observation
ii)	Relative density at 25 $^oC/25\ ^oC$	0.824 to 0.830	326 (Part 3)
iii)	Refractive Index $[n^{20}]$ at 20 ^oC	1.431 to 1.435	326 (Part 5)
iv)	Flash Point, ^oC	98	326 (Part 26)
v)	Gas Chromatographic analysis Nonanol, percentage by mass, *Min*	97	Annex A

5. PACKING AND MARKING

5.1 Packing

The material shall be supplied in well closed containers permitting a minimum of air space, as agreed to between the purchaser and supplier.

The material shall be well protected from light and stored in a cool place.

5.2 Marking

Each container so filled shall be clearly marked with the following information:

a) Name of the material;
b) Name of manufacturer and his recognized trade mark;
c) Net and gross mass of the material;
d) Net Volume of the material;
e) Batch no.; and
f) Any other statutory requirements.

6. SAMPLING

Representative samples of the material shall be drawn as prescribed under clause **3** of IS 326 (Part 1).

ANNEX A

[*Table* 1, *Sl. No.* (v)]

GAS CHROMATOGRAPHIC ANALYSIS OF NONANOL

A-1 GENERAL

OUTLINE OF THE METHOD

A representative part of the material is dissolved in a suitable solvent, if required, and the injected into gas chromatograph equipped with capillary column and flame ionization detector. On completion of chromatographic run, the chromatogram is acquired and area percent of each peak is automatically calculated and presented in the peak table.

A-2 APPARATUS

A-2.1 Gas Chromatograph equipped with split/splitless inlet, capillary column and flame ionisation detector.

A-2.2 Gas Chromatographic conditions for Polar column

Column	Capillary, fused silica, length 30m; internal diameter 0.25 mm, film thickness: 0.25 µm
Stationary phase	polyethylene glycol bonded
Oven temperature	Initial temperature 60 ºC Temperature ramping 4 ºC/min Final temperature 230 ºC (hold for 20 min)
Injector temperature	230 ºC
Split ratio	200: 1
Detector type	Flame Ionisation Detector (FID)
Hydrogen	40 ml/min.
Air	400 ml/min.
Make up (He)	30 ml/min.
Detector temperature	240 ºC
Carrier gas	Helium
Carrier gas flow mode	Constant pressure
Carrier gas pressure	76.7 kPa
Injection Volume	0.5 µl

A-2.2 Gas Chromatographic conditions for Non-Polar column

Column	Capillary, fused silica, length 30m; internal diameter 0.25 mm, film thickness: 0.25 µm
Stationary phase	100 percent methyl polysiloxane
Oven temperature	Initial temperature 60 ºC Temperature ramping 4 ºC/min Final temperature 230 ºC (hold for 20 min)
Injector temperature	230 ºC
Split ratio	200:1
Detector type	Flame Ionisation Detector (FID)
Hydrogen	40 ml/min.
Air	400 ml/min.
Make up (He)	30 ml/min.

Detector temperature	240 ºC
Carrier gas	Helium
Carrier gas flow mode	Constant pressure
Carrier gas pressure	76.7 kPa
Injection Volume	0.5 µl

NOTE — The above gas chromatographic conditions are suggestive. However, any GC method having difference in detector, column, packing material and type (packed/ capillary diameter, length, film thickness, etc.), calibration technique (internal standard, external standard, area normalization, percent area, etc.) carrier gas (He, H_2, N_2) may be used with applicable GC operating parameters, provided standardization and calibration of the components is established after setting GC parameters for the resolution and accuracy level as specified in this standard.

A-3 CALCULATION

Area percent of each peak is automatically calculated and presented in peak table of chromatogram.

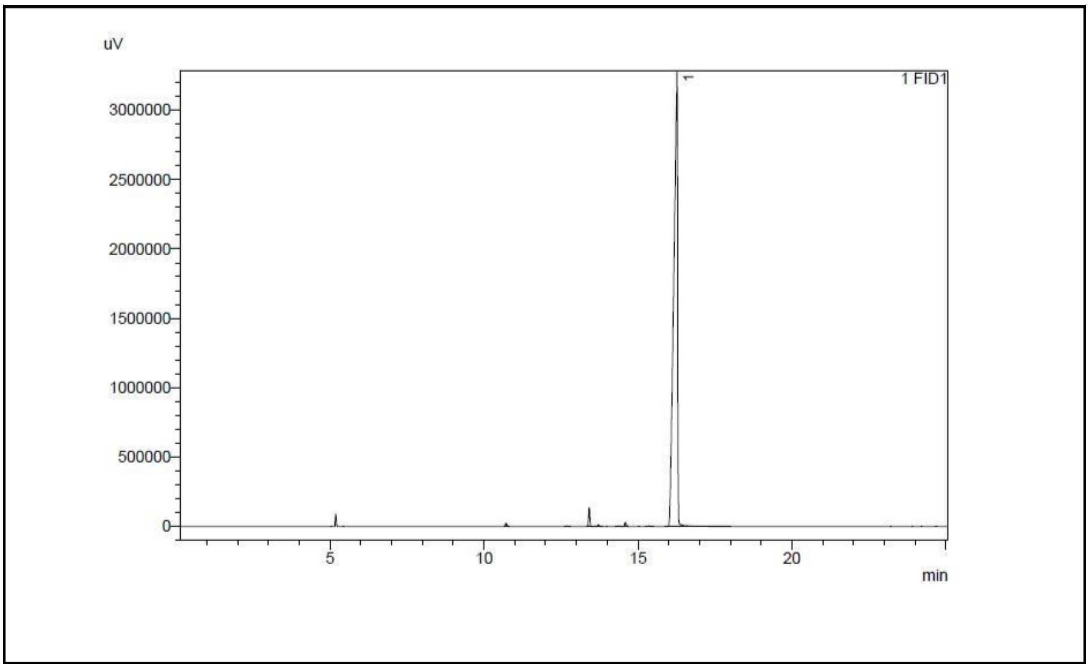

FIG. 1 – TYPICAL CHROMATOGRAM ACQUIRED ON A POLAR COLUMN

Peak No.	*Component*
1	Nonanol

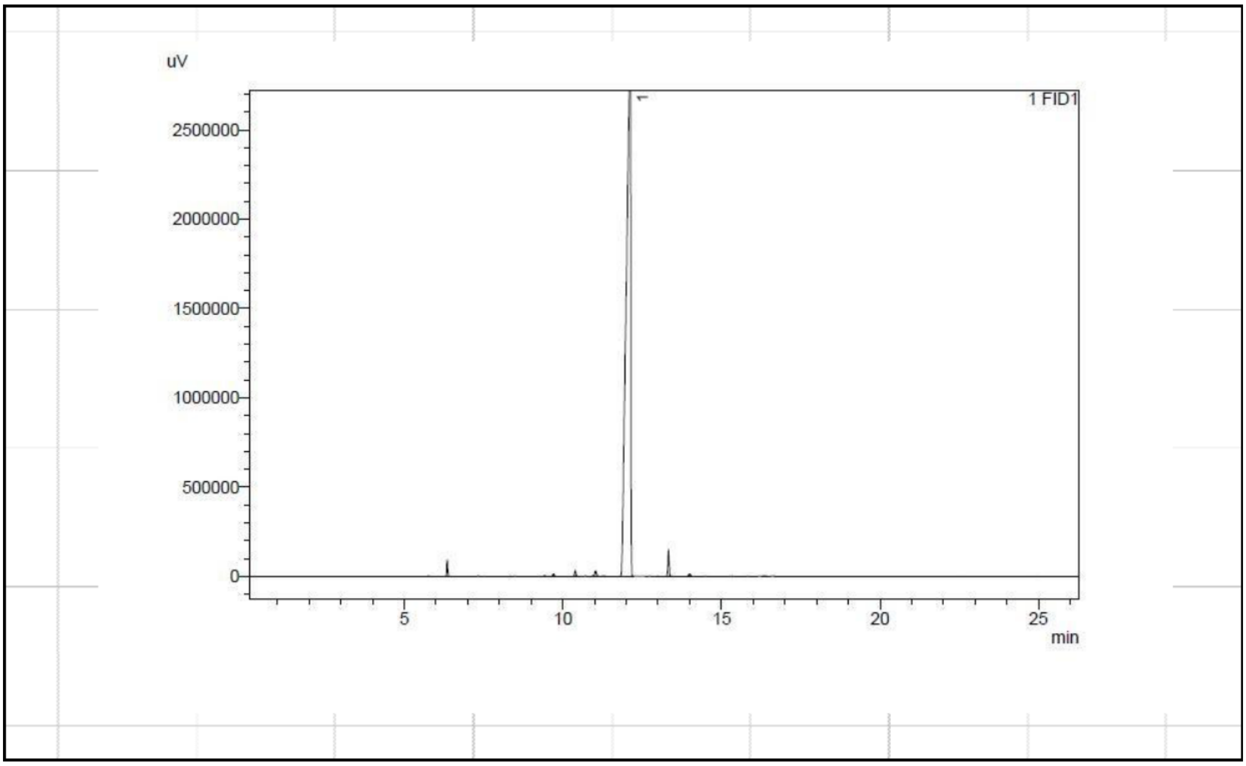

FIG. 2 – TYPICAL CHROMATOGRAM ACQUIRED ON A NON-POLAR COLUMN

Peak No.	*Component*
1	Nonanol

ANNEX B
(*Foreword*)

COMMITTEE COMPOSITION
Fragrance and Flavour Sectional Committee, PCD 18

Organization	*Representative(s)*
CSIR-Central Institute of Medical and Aromatic Plants, Lucknow	Dr Prabodh K. Trivedi (***Chairperson***)
All India Agarbathi Manufacturers Association, Bengaluru	Shri Sarath Babu P. S.
Aroma Sales Corporation, New Delhi	Shri Sunil Kumar Jain
Central Drugs Standard Control Organization, New Delhi	Shri Aseem Sahu
Central Drugs Testing Laboratory, Chennai	Shrimati C. Vijayalakshmi
Central Revenue Control Laboratory, New Delhi	Shri Suneel Mathur Shri Praful Dalal (*Alternate*)
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Member Secretary
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Scientist 'B'/Assistant Director
(Petroleum, Coal and Related Products Department), BIS

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central	: 601/A, Konnectus Tower -1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002	2323 7617
Eastern	: 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091	2367 0012 2320 9474
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